

COMDTINST 16121.1

COMMANDANT INSTRUCTION 16121.1

Subj: DIGITAL SELECTIVE CALLING OPERATIONS DOCTRINE

Ref: (a) Telecommunications Manual, COMDTINST M2000.3 (Series)
(b) Manual for use by the Maritime Mobile and Maritime Mobile-Satellite Services (ITU 1992)
(c) International Code of Signals (DMAHTC Pub 102)

1. PURPOSE. To establish policy and operational doctrine for the use of MF/HF Digital Selective Calling (DSC) in support of the Global Maritime Distress and Safety System (GMDSS) at shore stations within the Coast Guard Telecommunications System.
2. ACTION. Area, District Commanders, and unit Commanding Officers shall ensure compliance with the provisions of this Instruction.
3. DIRECTIVE AFFECTED. None
4. DISCUSSION.
 - a. General. The primary purpose of the Global Maritime Distress and Safety System (GMDSS) is to improve telecommunications to and from ships at sea by automatically identifying the caller and the location of a vessel in distress. The components of GMDSS rely primarily on satellite communications instead of traditional terrestrial communications (i.e., VHF/MF voice and radiotelegraphy). GMDSS becomes fully effective for the 77 signatory nations of the Safety of Life at Sea (SOLAS) convention on February 1, 1999. As a component of the GMDSS, Digital Selective Calling (DSC) is designed for automatic station calling, distress alerting, and the establishment of communications. DSC terminals call a specific station or group of stations to establish communications. DSC calls are

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A																										
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made using the applicable Maritime Mobile Station Identity (MMSI) and appropriate DSC guard frequencies. The MMSI is the equivalent of the international radio callsign for establishing DSC communications.

- b. DSC calls include distress, urgency, safety, position information, or other information as applicable. Federal Communication Commission (FCC) regulations require all VHF and MF/HF marine radio types accepted after 17 June 1999 to have DSC capability.
- c. GMDSS has 9 specific functions which SOLAS ships must be capable of performing. Functions 1-5 and 7-9 below are of specific concern to the Coast Guard for DSC purposes:
 - (1) Transmitting ship-to-shore distress alerts.
 - (2) Transmitting and receiving ship-to-ship distress alerts.
 - (3) Receiving shore-to-ship distress.
 - (4) Transmitting and receiving Search and Rescue (SAR) coordination communications.
 - (5) Transmitting and receiving on-scene communications.
 - (6) Transmitting and receiving locating signals (EPIRBs/ELTs)
 - (7) Transmitting and receiving Maritime Safety Information (MSI)
 - (8) Transmitting and receiving general radio communications (ship/ship and ship/shore).
 - (9) Transmitting and receiving bridge-to-bridge communications.
- d. GMDSS consists of numerous telecommunications sub-systems: some of which are listed below:
 - (1) DSC: For calling and distress via VHF-FM/MF/HF.

- (2) NAVTEX: Narrow-Band Direct-Printing Telegraphy for transmission of navigational and meteorological warnings and urgent information to ships on MF.
 - (3) SITOR: Simplex Teletypewriter over Radio for ship-to-shore communications and transmissions of MSI.
 - (4) INMARSAT A (analog) and B (digital): For ship/ship and shore/ship communications utilizing satellite. It can be interconnected to public switched telephone and data networks.
 - (5) INMARSAT C: For distress alerting, data communications and reception of MSI.
 - (6) Voice Broadcast: For transmission of MSI via VHF-FM/MF/HF.
 - (7) SART: Search and Rescue Transponder. For locating survival craft.
 - (8) Satellite EPIRB: Satellite Emergency Position-Indicating Radiobeacon. For locating survivors of distress incidents (406 MHz and INMARSAT-E, 1645 MHz)
- e. GMDSS Coverage Areas: GMDSS Area A1 may not be declared effective in the United States until sometime during or after 2001. The United States intends to declare GMDSS Area A2 fully effective by the GMDSS effective date. GMDSS Areas A3 and A4 are effective by international agreement and need not be declared effective by the United States.
- (1) Sea Area A1: VHF-FM Range - Coastal Area to approximately 20 miles offshore within the radiotelephone coverage of at least one VHF coast station with continuous DSC alerting capabilities. Sea Area A1 must be declared effective by a signatory nation. The United States may declare A1 effective for specific geographic areas.
 - (2) Sea Area A2: MF Range - The area beyond VHF-FM coverage to approximately 200 miles offshore within the radiotelephone coverage of at least one MF station with continuous DSC alerting capabilities. Sea Area A2 must be declared effective by a signatory nation. The United States may declare A2 effective for specific geographic areas.

- (3) Sea Area A3: INMARSAT - Generally defined as the area between 70N and 70S. Sea Area A3 includes Sea Areas A1 and A2 if not declared effective by the signatory nation.
 - (4) Sea Area A4: Beyond Areas A1, A2, and A3. Generally defined as the regions north of 70N and south of 70S.
- 5. POLICY. Area and District Commanders shall promulgate specific procedures for processing DSC communications within their Area of Responsibility.
 - a. Guard Requirements.
 - (1) Coast Guard Communications Stations will guard 6 DSC frequencies:

2187.5kHz, 4207.5kHz, 6312.0kHz, 8414.5kHz, 12577.0kHz, and 16804.5kHz simultaneously.
 - (2) Coast Guard Groups will guard 2187.5kHz and 156.525mHz (channel 70).
 - b. DSC Distress alerts shall be acknowledged within 2.75 minutes (165 seconds) following the initial distress alert.
 - c. All DSC Distress calls will be acknowledged via DSC on the frequency the call was received. All other DSC calls will be acknowledged if requested by the originator. The originator will normally dictate the method of acknowledgment (i.e., DSC, voice, or SITOR) and the working frequency in the initial DSC data transmission. If a specific method of response (i.e., SITOR) is not available to the called station, it shall advise the nearest equipped Coast Guard station to respond to the originator on its behalf.
 - d. International Code of Signals, DMAHTC Pub 102, will be used whenever a language barrier exists between the originating and responding stations.
 - e. Radio checks via DSC are encouraged and accepted whenever possible. When conducting radio checks via DSC, the alert signal shall not be used. Over-the-air testing of DSC distress alerts is encouraged on the appropriate working frequency. Testing of DSC distress alerts shall not be conducted on DSC guard frequencies.

- f. All distress, urgent, and safety calls received by CAMS and Groups shall be forwarded to the unit's respective Area or District Command Center for action. Other messages (i.e., Weather Observations (OBS), AMVER messages, and Ice reports) will be processed in accordance with current procedures.
- g. Many false distress alerts have occurred since the establishment of DSC. False alerts are normally the result of accidental or incorrect use of DSC equipment and may divert attention from a real distress. However, there are no DSC false alerts from the Coast Guard watchstander's perspective. Each alert must be investigated.
- h. The proper method for stations or ships to cancel a false alert they initiated is outlined below:
 - (1) Stop the transmission immediately, switch to the associated voice frequency and make an "all stations" broadcast. The broadcast should indicate the name, callsign, MMSI number, and that the station is canceling the false alert sent (quote distress text) with the date/time (UTC).
 - (2) DSC Guard Frequencies, Voice Frequencies, and SITOR Frequencies:

<u>DSC Guard Frequency</u>	<u>Voice Frequency</u>	<u>SITOR Frequency</u>
156.525MHz	156.8MHz	N/A
2187.5 kHz	2182 kHz	2174.5 kHz
4207.5 kHz	4125 kHz	4177.5 kHz
6312.0 kHz	6215 kHz	6268 kHz
8414.5 kHz	8291 kHz	8376.5 kHz
12577.0 kHz	12290 kHz	12520 kHz
16804.5 kHz	16420 kHz	16695 kHz
- i. All DSC initiated calls addressed to the Coast Guard must be acknowledged. If the Coast Guard is unable to provide the requested service (i.e., commercial message processing), the originator will be notified that we are unable to comply and directed elsewhere for service.
- j. Responding stations (CAMS and Groups) will use the MMSI of the remote site from which they are transmitting.

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- k. All Coast Guard originated DSC calls are preceded by a preset 200 bit phasing sequence. The phasing sequence gives character bit information to the receiver to allow accurate assignment of characters within a call sequence. The preset sequence shall not be changed by field personnel.
6. PLANS. Enclosure (1) is a list of planned MF/HF DSC installation sites for Coast Guard shore stations. The VHF DSC installation plan will be included in the National Distress System Modernization Project (NDSMP).

Encl: (1) DSC Site Implementation Plan